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⑤4 An operating handgrip device for a latch.

57) In an operating handgrip device for a latch, the handgrip (11) is removably fixed to an operating shaft (4) of the latch by an elastic snap-engageable coupling (9, 26) that allows the handgrip (11) to be

mounted quickly and easily on the operating shaft (4) and ensures that the clearance between them is constant and limited.

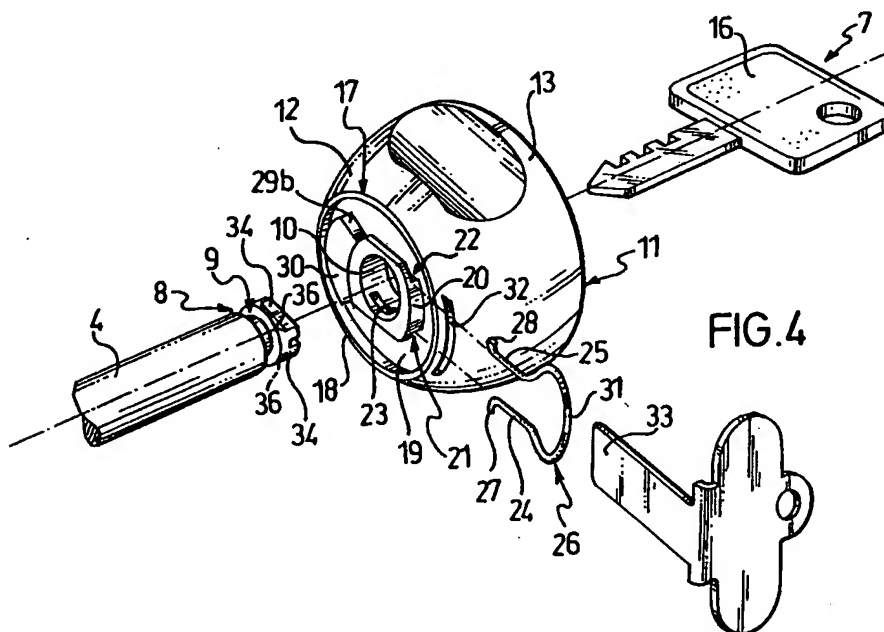


FIG. 4

The present invention relates to an operating handgrip device for a latch, in which the handgrip is removably fixed to an operating shaft of a latch by retaining means operating between the handgrip and the shaft.

Handgrips on doors, sashes or the like are generally used both as operating members for latches and as grips to facilitate the opening and closing of doors, sashes etc., on which they are mounted. In cases where handgrips operate latches, they can either be fitted with a lock or not.

In the prior art, handgrips are fitted to doors, sashes, etc., in various ways.

If the handgrip is not an operating member, that is, it does not need to turn, it is generally fixed to the door or sash with screws, glue or other methods.

If, on the other hand, the handgrip is also used as an operating member, it is fixed to an operating shaft of the latch by retaining means including a grub screw which is screwed into the handgrip and engages a corresponding seat formed in the shaft.

However, this type of fixing system, by means of a grub screw is not without drawbacks.

A first drawback is that often, for aesthetic reasons, the grub screw is positioned hidden by the handgrip so that it is screwed only with difficulty into its seat in the operating shaft, which can mean the handgrip is badly fixed to the shaft.

A further drawback is that, in use of the handgrip the grub screw tends to loosen, leading to increased clearance between the handgrip and the operating shaft, thus contributing to premature wear of these latter and poor working of the operating handgrip device.

The technical problem underlying this invention is to provide an operating handgrip device for a latch which does not have the drawbacks described above.

This problem is solved by the present invention, which provides an operating handgrip device for a latch, in which the handgrip is removably fixed to an operating shaft of the latch by retaining means operating between the handgrip and the operating shaft, characterised by the fact that said retaining means are elastically snap-engageable means.

For a better understanding of the characteristics and advantages of the invention, there follows a description of a non-limitative embodiment thereof, illustrated in the appended drawings, in which:

Figure 1 shows in axial section an operating handgrip device for a latch made according to the present invention;

Figure 2 shows a cross-section, taken on the line II-II, of the operating handgrip device of Figure 1;

Figure 3 is an exploded frontal perspective view of the operating handgrip device of Figure 1;

Figure 4 is an exploded rear perspective view of the operating handgrip device of Figure 1; and

Figures 5 and 6 show, in enlarged cross-section, a disassembling sequence of the above operating handgrip device.

In Figure 1, an operating handgrip device 1 for a latch, with lock, comprises a handgrip 11 and lock 2.

The lock 2, of a known type, is made up of a drum 3 in which a cylinder 4 is rotatable and forms the operating shaft of a latch; in the example illustrated, the latch simply comprises a catch 5 fixed to the cylinder 4. Said cylinder 4 has a keyhole 6 into which fits a key 7.

The end portion 8 of the cylinder 4, at the opening of the keyhole 6, has a groove 9 and is lodged in a hole 10 formed in a rear portion 12 of the handgrip 11. In the end portion 8 of the cylinder 4 are also formed two flat parallel faces 34 which mate with two flat parallel faces 35 formed in the hole 10 so that the handgrip 11 and the cylinder 4 are fixed together for rotation.

The front portion 13 of the handgrip 11 is formed with a frustoconical cavity 14, in the bottom of which is the entrance to the keyhole 6. In the cavity 14 is formed an oblong seat 15 intended to receive a flat head 16 of the key 7 with form coupling.

In the rear portion 12 of the handgrip 11 is formed a housing constituted by a recess 17 defined by a perimeter wall 18 and also by a base 19 into which opens the hole 10. In the recess 17, the edge of the hole 10 extends into a boss 20. In two opposite parallel sides of the boss 20 are two undercut recesses 21, 22, shown in Figure 4, into each of which opens a slot; Figure 4 shows only the slot in the undercut recess 21, indicated with 23. The elastically deformable arms 24, 25 of a spring clip 26 are slidably retained in the undercut recesses 21, 22 respectively. The distance between the arms 24, 25 is less than the diameter of the hole 10 so that a portion of each arm passes through a respective slot in the undercut recesses 21, 22 and engages the groove 9 of the cylinder 4. The ends 27, 28, of the arms 24, 25, are bent outwards and contact two divergent deflecting surfaces 29A and 29B of an abutment 30 fixed in the recess 17. The portion 31 of the spring clip 26 that links the arms 24, 25, fits against the perimeter wall 18 at a passage 32 formed in the said wall 18 and serves as a manoeuvring portion.

When the key 7 is fitted into the keyhole 6, the head 16 of the said key 7 fits into the seat 15 with form coupling, so it is substantially hidden in the cavity 14. When the key 7 is fitted into the keyhole 6, the lock 2 is released so that the turning of the

handgrip 11 also rotates the cylinder 4 of the lock 2. The rotation of the cylinder 4 causes the rotation of the catch 5 which, in known manner, locks the door, sash or the like to which the illustrated operating handgrip device 1 is fitted.

The handgrip 11 is fitted to the lock 2 by inserting the end portion 8 of the cylinder 4 in the hole 10 so that the entry of the keyhole 6 faces the cavity 14 and in particular the seat 15 of the front portion 13 of the handgrip 11, and so that the arms 24, 25 of the spring clip 26 snap engage the groove 9 attaching the handgrip 11 to the cylinder 4. In these conditions, the recess 17 is facing the panel 32 of the door, sash or the like to which the operating handgrip device 1 is fitted, so that the spring clip 26 is hidden inside the recess 17. The end portion 8 of the cylinder 4 has two bevels 36 between the flat surfaces 34 and the groove 9 so that, when the handgrip 11 is fitted onto the cylinder 4, the arms 24, 25, whose distance from one to the other is less than the diameter of the cylinder 4, diverge elastically by interaction with the bevels 36 and snap into the groove 9.

With reference to Figures 5 and 6, to remove the handgrip 11 from the lock 2, a tool, indicated in the drawings as 33, and adapted to push the manoeuvring portion 31 of the spring clip 26, is fitted into the passage 32. With one end of the tool 33 the manoeuvring portion 31 is pushed towards the abutment 30 so that the ends 27, 28 of the arms 24, 25 slide on the respective divergent deflecting surfaces 29A, 29B causing the arms to diverge. When the arms 24, 25 diverge they are released from the groove 9, permitting the release and removal of the handgrip 11 from the cylinder 4.

From the above description and the appended drawings, it is clear that the mounting of the handgrip 11 on the cylinder 4 of the latch is extremely easy and fast as the handgrip is simply slipped onto the cylinder.

In addition, thanks to the engagement of the spring clip 26 in the groove 9, the clearance between the handgrip 11 and the cylinder 4 remains constant and limited.

It should be noted that it is equally easy and fast to disassemble the handgrip 11 from the cylinder 4, this needing only one manoeuvre to open the spring clip 26 and slide the handgrip from the cylinder. Furthermore, thanks to the passage 32 in the handgrip 11, the spring clip 26 is readily accessible.

It is obviously possible to make alterations and/or additions to the embodiment described above and illustrated in the drawings.

Instead of the spring clip, any elastically deformable element can be used that can fit into a housing in the handgrip and elastically snap engage a groove in the operating shaft.

This elastically deformable element can have any shape and section so as to elastically snap engage the groove of the operating shaft.

The groove of the operating shaft can obviously be replaced by any equivalent engaging element.

In general, the handgrip can be fixed to the operating shaft by any type of elastically snap-engageable means.

The passage in the handgrip, connecting the housing for the elastically deformable element with the outside can be formed in various ways in the handgrip itself.

The handgrip can be any shape and need not have a lock. The operating shaft can also be any shape. The latch can be of any type.

#### Claims

1. An operating handgrip device (1) for a latch, in which the handgrip (11) is removably fixed to an operating shaft (4) of the latch by retaining means operating between the handgrip (11) and the operating shaft (4), characterised by the fact that said retaining means are elastically snap-engageable means (9, 26).
2. An operating handgrip device according to Claim 1, in which the said handgrip (11) is formed with a passage (32) which connects a housing (17) for the said elastically snap-engageable means with the outside to permit the insertion of a tool (33) which acts on said snap-engageable means to disengage them from locking the handgrip (11) onto the operating shaft (4).
3. An operating handgrip device according to Claim 1, in which said elastically snap-engageable means comprises at least one elastically deformable element (26) lodged in a housing (17) in the handgrip (11) and snap engaged with a groove (9) of said operating shaft (4).
4. An operating handgrip device according to Claim 3, in which said handgrip (11) is formed with a passage (32) connecting said housing (17) with the outside for permitting the insertion of a tool (33) which acts on said elastically deformable element (26) to free it from engagement with the groove (9) of the operating shaft (4).
5. An operating handgrip device according to Claim 3, in which two elastically deformable elements are provided and consist of two arms (24, 25) of a spring clip (26).

6. An operating handgrip device according to Claim 5, in which the spring clip (26) is slidably retained in said housing (17) of the handgrip (11), and the ends (27, 28) of the arms (24, 25) of the spring clip (26) contact respective divergent deflecting surfaces (29A, 29B) of an abutment (30) fixed in said housing (17), and in which the portion (31) of the spring clip (26) linking the two arms (24, 25) acts as a manoeuvring portion, accessible from the outside through a passage (32) formed in the handgrip (11) to push the spring clip (26) towards the abutment (30) so that the ends (27, 28) of the arms (24, 25) slide on the divergent deflecting surfaces (29A, 29B) causing the spring clip (26) to open and the arms (24, 25) to disengage from the groove (9) of the operating shaft (4).
7. An operating handgrip device according to Claim 6, in which the said housing (17) is formed in a rear portion (12) of the handgrip (11) and is defined by a perimeter wall (18) in which is formed the said passage (32) and by a base (19) into which opens a through-hole (10) formed in the handgrip (11) to receive the operating shaft (4), the edge of the through-hole (10) extending into a boss (20) having two undercut recesses (21, 22) which receive the arms (24, 25) and into which open respective slots through which the arms (24, 25) pass to engage the groove (9) of the operating shaft (4).
8. An operating handgrip device according to Claim 6, in which the said ends (27, 28) of the arms (24, 25) are bent outwards.
9. An operating handgrip device according to Claim 1, provided with a lock (2) comprising a cylinder (4) forming said operating shaft, the handgrip (11) having a through-hole (10) for receiving the cylinder (4) and a frontal cavity (14) into which opens the through-hole (10), the cylinder (4) having a keyhole (6) opening in the cavity (14) in which is formed a seat (15) adapted to receive with form coupling a head (16) of a key (7) associated with the keyhole (6).

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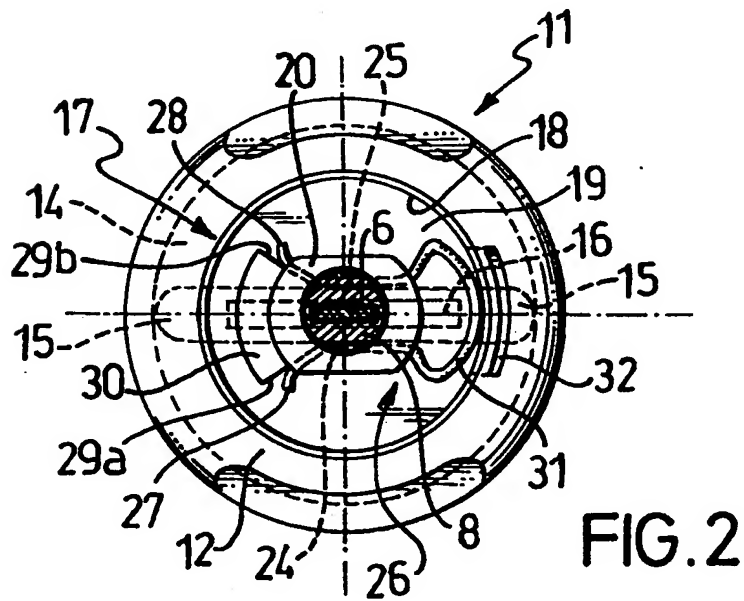
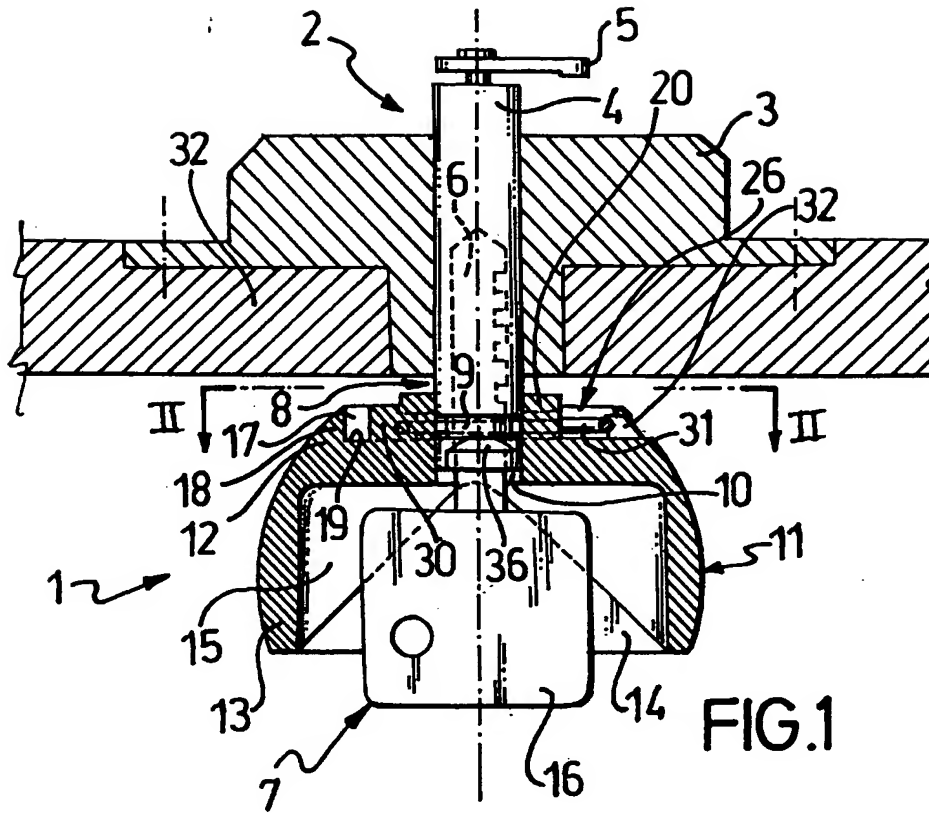
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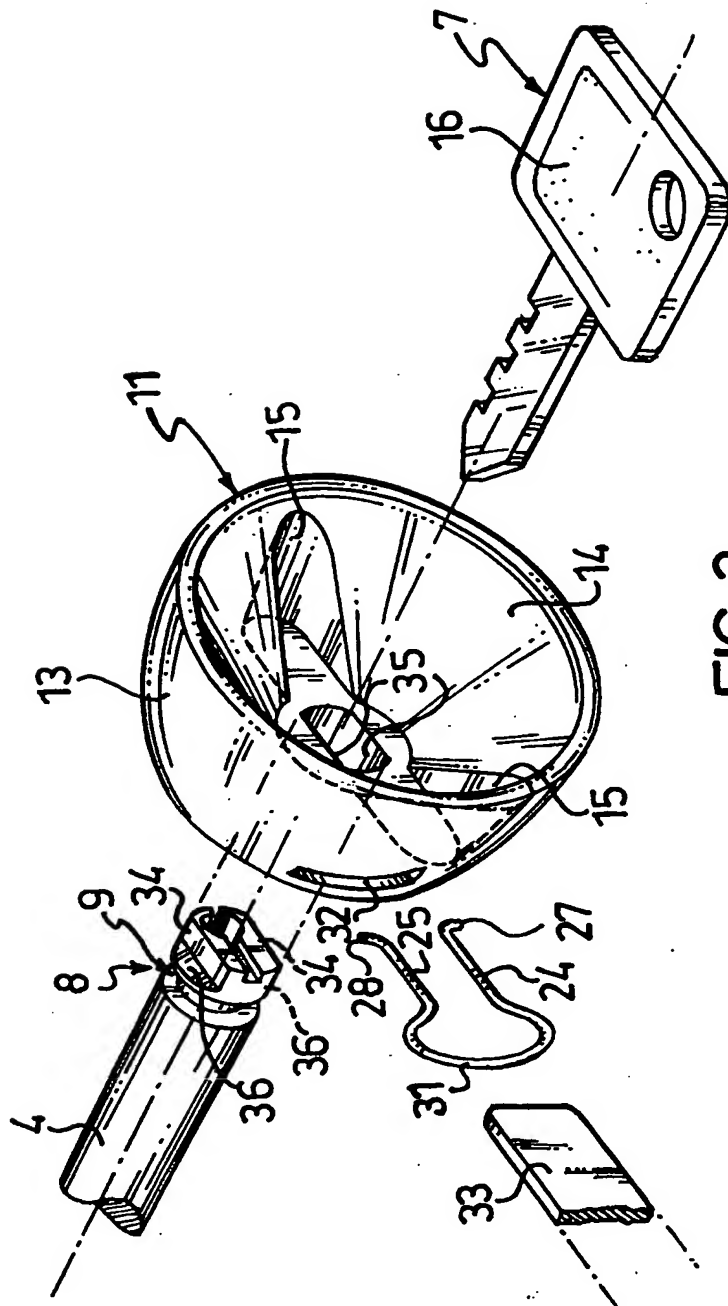
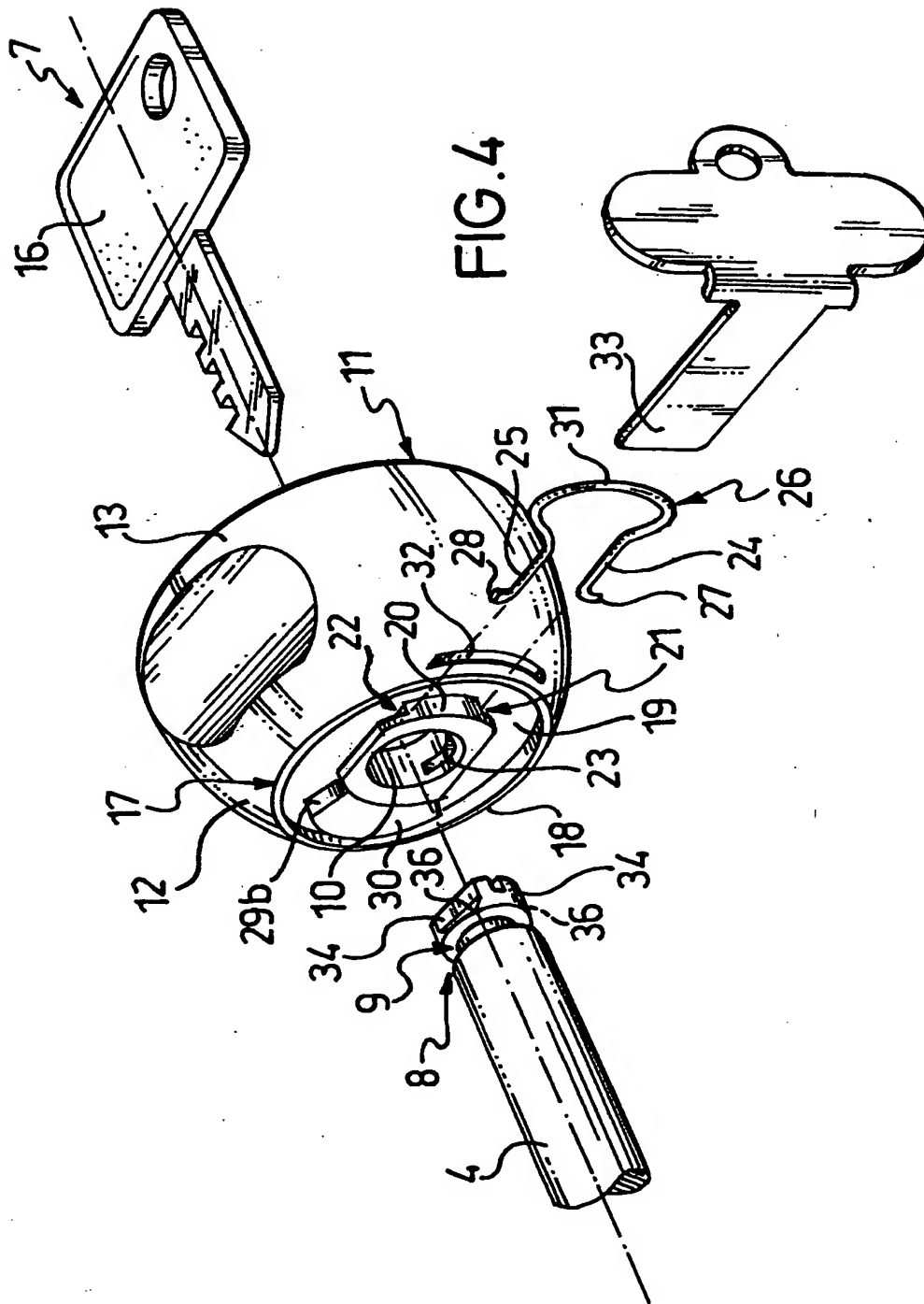
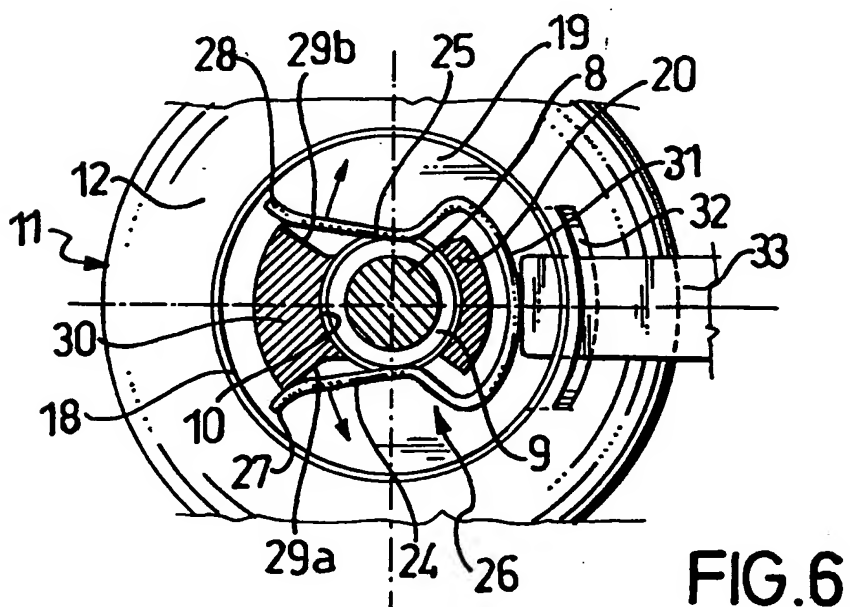
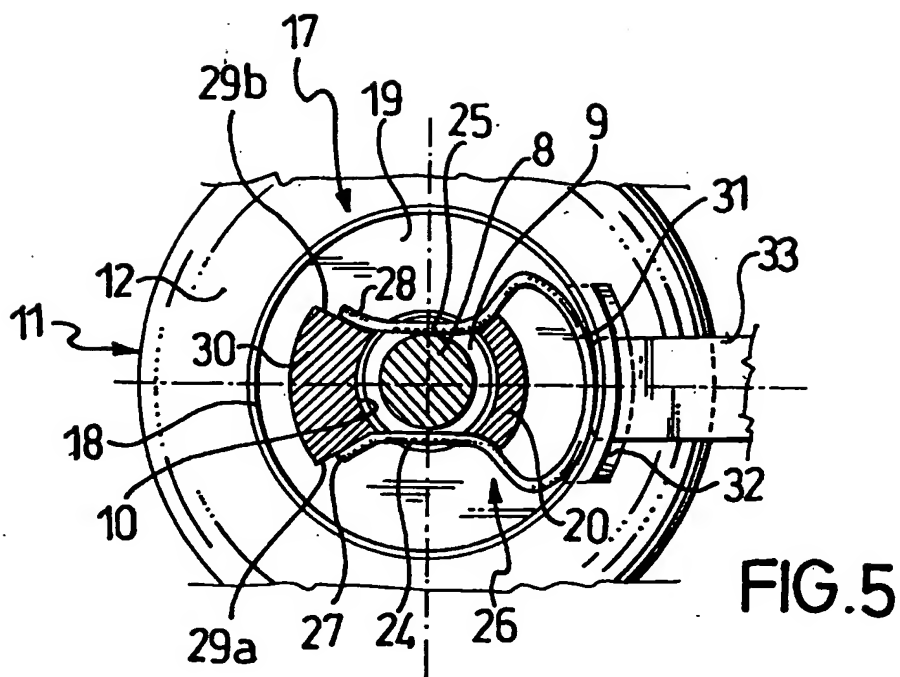


FIG. 3









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# EUROPEAN SEARCH REPORT

Application Number

EP 92 11 6161

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-1 877 798 (S.F. BRIGGS ET AL.) * page 2, line 11 - line 30 *	1-5	E05B3/00 F16B21/18
Y	---	6-8	
X	GB-A-2 013 271 (MIWA ROKKU K.K.K.) * page 1, line 91 - line 105 *	1-4,9	
X	FR-E-51 961 (UNITED CARR FASTENER CORPORATION) * page 3, line 7 - line 12 *	1-4	
Y	FR-A-1 472 486 (CLAS S.A.R.L.) * page 1, left column; figures 1,2 *	6-8	
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			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E05B F16B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31 MARCH 1993	Examiner GERARD B.
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